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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,262	12/31/2003	Ming-Cheng Hsiao	BHT-3214-78	6586

7590 08/25/2005

TROXELL LAW OFFICE PLLC
SUITE 1404
5205 LEESBURG PIKE
FALLS CHURCH, VA 22041

EXAMINER	
FEELY, MICHAEL J	
ART UNIT	**PAPER NUMBER**
1712	

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/748,262	HSIAO ET AL.	
	Examiner	Art Unit	
	Michael J. Feely	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☒ Claim(s) *1-3 and 5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Claims 1-5 are pending.

Claim Objections

1. Claims 1-3 and 5 are objected to because of the following informalities: in claim 1, it appears that "(3) an inorganic salt" should be replaced with: --(3) an inorganic filler-- *(see claim 4)*. Appropriate correction is required.

Claim Rejections - 35 USC § 103

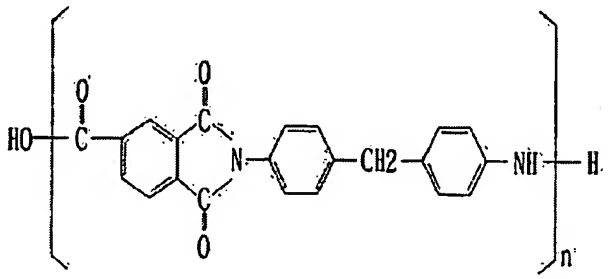
2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiou et al. (US Pat. No. 6,809,130).

Regarding claims 1-5, Chiou et al. disclose: *(1)* a high thermal conductive halogen-free phosphorous-free retardant resin composition (Abstract), comprising: (1) an epoxy resin, having bi-functional and poly-functional groups, in an amount of 10 to 50% by weight of the total composition (Abstract; column 4, line 65 though column 5, line 50); (2) a retardant ***derived from*** a functional structure of amide, imide and hydroxy groups in an amount of 10 to 30% by weight of the total composition (Abstract; column 4, line 65 through column 5, line 50), and having a chemical structure as (A):



(A)

wherein n is a positive integer (column 4, lines 10-63); (3) an inorganic powder, in an amount of 10 to 50% by weight of the total composition (Abstract; column 4, line 65 through column 5, line 50); and (4) a high thermal conductive metal powder, in an amount of 10 to 30% by weight of the total composition (Abstract; column 4, line 65 through column 5, line 50);

(2) wherein said epoxy resin has an epoxide equivalent of 150 to 100 (column 5, lines 8-50);

(3) wherein said epoxy is selected from *see claim for list* (column 5, lines 8-50);

(4) wherein said inorganic powder is selected from the group consisting of silicon dioxide, titanium dioxide, alumina, aluminum hydroxide, magnesium hydroxide, calcium carbonate and mixtures thereof having an average particle size between 0.01 micron and 5 micron (column 5, lines 4-7); and

(5) wherein said high thermal conductive powder is selected from the group consisting of aluminum nitride, boron nitride, *aluminum oxide*, silver, aluminum, zinc oxide, carbon nano tube and mixtures thereof having an average particle size between 0.01 micron and 10 micron (column 5, lines 4-7).

Chiou et al. do not use compound (A) in an un-reacted state in their composition; rather, they integrate compound (A) into the epoxy by pre-reacting compound (A) with a novolac epoxy. The reaction product is then blended with an epoxy matrix resin to form a halogen-free and phosphorus-free composition. On its own, compound (A) is reactive towards epoxy resin, so it would inherently react with the epoxy resin in the instantly claimed composition. Chiou et al. essentially changes the sequence of adding ingredients with their pre-reaction step; therefore, their composition would have been an obvious variation of the instant invention in the absence of new or unexpected results – *see MPEP 2144.01 IV. C.*

Therefore, it would have been obvious to add an un-reacted compound (A) to the composition of Chiou et al. because the pre-reaction of compound (A) and a novolac epoxy in the composition Chiou et al. merely represents a change in sequence of adding ingredients of the instant invention. This composition would have been an obvious variation of the instant invention in the absence of new or unexpected results.

5. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al. (JP 200-265040) in view of Suzuki et al. (JP 43-6302).

Regarding claims 1-3, Kashiwabara et al. disclose: *(1)* a high thermal conductive halogen-free phosphorous-free retardant resin composition (Abstract; paragraph 0004),

comprising: (1) an epoxy resin, having bi-functional and poly-functional groups, in an amount of 10 to 50% by weight of the total composition (Abstract; paragraphs 0004-0006); (2) *a curing agent, preferably enhancing thermal resistance* (paragraph 0005); (3) an inorganic powder, in an amount of 10 to 50% by weight of the total composition (Abstract; paragraph 0007); and (4) a high thermal conductive metal powder, in an amount of 10 to 30% by weight of the total composition (Abstract; paragraph 0007);

(2) wherein said epoxy resin has an epoxide equivalent of 150 to 100 (paragraph 0005; Examples); and

(3) wherein said epoxy is selected from *see claim for list* (paragraph 5; Examples).

Kashiwabara et al. provide little limitation to their curing agent, with a preference towards one that provides thermal stability (paragraph 0005). However, they are silent regarding the use of claimed compound (A).

Suzuki et al. disclose a hardener for epoxy resins that corresponds to the structure of claimed compound (A) (Abstract). These curing agents provide improved heat stability of the hardened epoxy resins. In light of this, the hardener of Suzuki et al. would appear to be a logical fit for the hardener to be used in the composition of Kashiwabara et al. because it provides improved heat stability to the hardened epoxy resin composition.

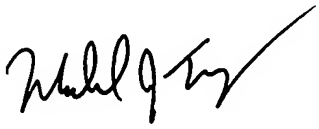
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use claimed (un-reacted) compound (A) as a hardener, as taught by Suzuki et al., in the composition of Kashiwabara et al. because Suzuki et al. disclose that this hardener provides improved heat stability to hardened epoxy resin compositions.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael J. Feely
Primary Examiner
Art Unit 1712

August 21, 2005